IN THE CLAIMS

Kindly cancel Groups II - IV, claims 20-35 without prejudice.

1. (original) A method for the spatially resolved determination of physical, chemical and/or biological properties or state variables, particularly substance concentrations, temperature, pH and/or physical fields, and/or the change in such physical, chemical and/or biological properties or state variables in an examination area of an examination object by determining the change in the spatial distribution and/or the mobility, particularly the mobility in rotation, of magnetic particles in this examination area or in parts thereof as a function of the effect of physical, chemical and/or biological influencing variables on at least a part-area and/or in the physical, chemical and/or biological conditions in at least a part-area of the examination area, by means of the following steps:

a) introducing at least partially covered and/or coated magnetic particles having at least one solid, viscous and/or liquid shell or coating and into at least part of the examination area and/or introducing magnetic particles into at least part of the examination area and covering and/or coating at least some of these particles in the examination area,

b) generating a magnetic field with a spatial profile of the magnetic field strength such that there is produced in the examination area a first part-area having a low magnetic field strength and a second part-area having a higher magnetic field strength,

c) changing the, in particular relative, spatial position of the two part-areas in the examination area or changing the magnetic field strength in the first part-area so that the magnetization of the particles is locally changed,

d) detecting signals that depend on the magnetization in the examination area that is influenced by this change, and

e) evaluating the signals so as to obtain information about the change in the spatial distribution and/or mobility of the magnetic particles in the examination area.

2. (original) A method as claimed in claim 1, characterized in that step b) takes place before step a) or in that steps a) and b) are carried out essentially at the same time and/or in that steps c) to e) are repeated at least once.

3. (previously presented) A method as claimed in claim 1, characterized in that the examination object is a polymer material, in particular a thermoplastic polymer or a polymer blend, a polymer melt, a microorganism, a plant, a plant part, a living thing or a part of a living thing.

4. (previously presented) A method as claimed in claim 1, characterized in that the degree of mobility of the magnetic particles in the examination area is determined continuously or at intervals and is correlated with a state variable or property of the examination area, in particular a temperature, a concentration and/or a viscosity.

5. (previously presented) A method as claimed in claim 1, characterized in that the degree of mobility of the magnetic particles in a polymer melt that is forming or curing is determined continuously or at intervals and is correlated with the degree of curing or the degree of melting of a polymer material, in particular of a thermoplastic polymer.

6. (previously presented) A method as claimed in claim 1, characterized in that at least some of the magnetic particles have anisotropic properties.

7. (previously presented) A method as claimed in claim 1, characterized in that the effective anisotropy of the magnetic particles is great enough for the reversal of the magnetization of the particle to take place by means of geometric (Brown's) rotation and by means of Neel's rotation.

8. (previously presented) A method as claimed in claim 1, characterized in that the magnetic particle is a monodomain particle the magnetization of which is reversed by means of Brown's rotation and Neel's rotation.

9. (previously presented) A method as claimed in claim 1, characterized in that the magnetic particle is a hard- or soft-magnetic multidomain particle.

10. (previously presented) A method as claimed in claim 1, characterized in that the magnetic particles comprise hard-magnetic materials.

11. (previously presented) A method as claimed in claim 1, characterized in that the hard-magnetic materials comprise Al-Ni, Al-Ni-Co and Fe-Co-V alloys and also barium ferrite (BaO $6xFe_2O_3$).

12. (previously presented) A method as claimed in claim 1, characterized in that the material for the covering or coating can be degraded or dissolved thermally, chemically, biochemically, by means of electromagnetic radiation or ultrasound and/or mechanically.

13. (previously presented) A method as claimed in claim 1, characterized in that the material for the covering or coating comprises polysaccharides, starch, in particular dextrins or cyclodextrins, waxes, oils, fats, glycerin, gels or plastics, in particular thermoplastic polymers or blends thereof.

14. (previously presented) A method as claimed in claim 1, characterized in that at least some of the magnetic particles have a coating or covering consisting of at least one protein, polypeptide, antibody and/or organosilane.

15. (previously presented) A method as claimed in claim 1, characterized in that the evaluation takes place by means of the following steps:

a) selection of a path for the movement of the first part-area having a low magnetic field strength within the examination area,

b) recording of reference data by means of reference samples along the path according to a) at at least one location, in particular a number of locations, in the case of at least two, in particular a number of, external parameters using at least a first receiving coil,

c) interpolation and/or extrapolation of the reference data recorded in b) in respect of points and external parameters not recorded in step b),

d) measurement of the path within the examination area in a sequence that is identical to that used for the recording of data by means of reference samples according to b) via at least a first and/or second receiving coil, and

e) comparison of the data obtained according to d) with the reference data according to b) and/or c), in particular by minimizing the error square.

16. (original) A method as claimed in claim 15, characterized in that in a step c') that follows step c), the reference data obtained in steps b) and/or c) are converted to the characteristics of at least a second receiving coil used for the measurement in step d).

17. (previously presented) A method as claimed in claim 15, characterized in that in a further step f) the data obtained by means of comparison in step e) are assigned to a gray value for a pixel to give an image, with the relative pixel intensity representing the degree of the determined external parameters.

18. (original) A method as claimed in claim 17, characterized in that in a further step g) the images obtained in step f) are displayed in a merged image.

19. (previously presented) A method as claimed in claim 15, characterized in that the sequence of steps d) and e) is repeated at least once.

Claims 20 - 35. (cancel).